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IS 2969 (1974): Method for Determination of Oil Content of Jute Yarn and Fabrics [TXD 5: Chemical Methods of Test]



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IS:2969-1974

(Reaffirmed 1999)

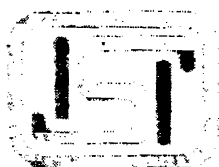
Indian Standard

METHOD FOR DETERMINATION OF OIL CONTENT OF JUTE YARN AND FABRICS

(First Revision)

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Indian Standard

METHOD FOR DETERMINATION OF OIL CONTENT OF JUTE YARN AND FABRICS (First Revision)

Chemical Methods of Test Sectional Committee, TDC 5

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Indian Standard
METHOD FOR
DETERMINATION OF OIL CONTENT OF
JUTE YARN AND FABRICS
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 4 October 1974, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1964. It has now been revised to include the method for determining the oil content of jute yarn and fabrics on the basis of conditioned mass of the test specimens, which is widely used in countries importing jute products from India.

0.3 During conversion of jute fibres into yarn considerable amount of oil, commonly known as batching oil, is used in the form of its emulsion in water. Some or all of the oil is present in the later stages of manufacture of jute goods. The finished jute goods usually contain 5 to 9 percent oil. In the case of special goods, the oil content may be up to 1 percent only.

0.4 In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS: 2-1960*.

1. SCOPE

1.1 This standard prescribes two methods for determination of oil content of all types of jute yarn and fabrics, namely conditioned-mass method and oven-dry method.

2. PRINCIPLE

2.1 A known amount of the sample is extracted with trichloroethylene or light petroleum in Soxhlet apparatus. The solvent is removed by

*Rules for rounding off numerical values (revised).

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distillation and the extract is weighed. The mass of the extract is expressed as a percentage of the oven-dry mass of the extracted specimen or conditioned mass of the test specimen before extraction.

3. SAMPLING

3.1 Lot — The quantity of jute yarn or fabric purporting to be of one definite type and quality delivered to one buyer against one despatch note shall constitute a lot.

3.2 Samples from the lot shall be so drawn as to be representative of the lot. Samples drawn in accordance with the procedure laid down in the specification for the material or as agreed to between the buyer and the seller shall be held to be representative of the lot.

4. PREPARATION OF TEST SPECIMENS

4.1 From each bundle of yarn or cut of fabric selected, draw a test specimen weighing 6 to 8 g.

5. ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTING

5.1 Conditioned-Mass Method — The test shall be carried out in the standard atmosphere after conditioning the test specimens as prescribed in IS: 6359-1971*.

5.2 Oven-Dry Method — The test may be carried out in the prevailing atmosphere.

6. APPARATUS

6.1 Soxhlet Apparatus

6.2 Drying Oven — capable of maintaining a temperature of $105 \pm 3^{\circ}\text{C}$.

6.3 Weighing Balance — capable of weighing to an accuracy of 1 mg.

7. REAGENTS

7.1 Quality of Reagents — Unless specified otherwise, pure chemicals shall be employed in test and distilled water (*see* IS: 1070-1960†) shall be used where the use of water as a reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

*Method for conditioning of textiles.

†Specification for water, distilled quality (*revised*).

7.2 The reagents to be used in the test shall be as follows.

7.2.1 *Trichloroethylene*

7.2.2 *Light Petroleum* — boiling range 40 to 60°C.

8. PROCEDURE

8.1 Conditioned-Mass Method

8.1.1 Take a test specimen conditioned in the standard atmosphere (see 5.1), determine its mass (M_e) correct to 1 mg and place it in the thimble of the Soxhlet apparatus. Take about 100 ml of trichloroethylene or light petroleum in the extraction flask previously cleaned, dried and weighed correct to 1 mg. Extract the test specimen for 1½ to 2 hours with a minimum of 6 siphonings per hour. Disconnect the apparatus.

8.1.2 Recover the excess of the solvent by heating the flask in a water-bath, maintained at 95 to 95°C if the solvent is trichloroethylene and 60 to 65°C if the solvent is light petroleum, and simultaneously allowing a stream of air to pass through the flask by means of a tube terminating just below its neck. Remove all traces of moisture by heating the flask at $105 \pm 3^\circ\text{C}$ for ½ hour. Weigh the flask and determine the mass of the extract (M_e) correct to 1 mg.

8.1.3 Repeat the test with the remaining test specimens.

8.2 Oven-Dry Method

8.2.1 Take a test specimen, weigh it to the nearest milligram and place it in the thimble of the Soxhlet apparatus. Take about 100 ml of trichloroethylene or light petroleum in the extraction flask previously cleaned, dried and weighed correct to 1 mg. Extract the test specimen for 1½ to 2 hours with a minimum of 6 siphonings per hour. Disconnect the apparatus.

8.2.2 Withdraw the specimen from the apparatus, open it out and allow the excess solvent to evaporate. Dry the specimen for 4 hours at $105 \pm 3^\circ\text{C}$ in the drying oven. Transfer the dried specimen to a tared airtight container, cool and weigh. Determine the oven-dry mass of the specimen (M_d) correct to 1 mg.

8.2.3 Proceed further as in 8.1.2.

8.2.4 Repeat the test with the remaining test specimens.

9. CALCULATIONS

9.1 Calculate the oil content percent of each specimen to the nearest 0.1 percent as follows:

Conditioned-mass basis:

$$\text{Oil content percent} = \frac{M_e}{M_e} \times 100$$

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where

M_e = mass in milligrams of the extract (8.1.2), and

M_c = mass in milligrams of the conditioned specimen (8.1.1).

Oven-dry-mass basis:

$$\text{Oil content percent} = \frac{M_e}{M_d} \times 100$$

where

M_e = mass in milligrams of the extract (8.2.3), and

M_d = mass in milligrams of the oven-dry de-oiled specimen (8.2.2).

9.2 Calculate the average of all the values obtained as in 9.1 to the nearest 0.1 percent.

10. REPORT

10.1 The report shall include the following information:

- a) Average oil content percent,
- b) Method followed, and
- c) Number of specimens tested.

AMENDMENT NO. 1 JANUARY 1999
TO
IS 2969 : 1974 METHOD FOR DETERMINATION OF
OIL CONTENT OF JUTE YARN AND FABRICS
(First Revision)

FOREWORD

(This amendment has been issued to accommodate the use of *n*-hexane as an extracting reagent.)

(Page 3, clause 2.1) — Substitute the following for the existing:

'2.1 A known amount of the sample is extracted with trichloroethylene or light petroleum or *n*-hexane in Soxhlet apparatus. The solvent is removed by distillation and the extract is weighed. The mass of the extract is expressed as a percentage of the oven-dry mass of the extracted specimen or conditioned mass of test specimen before extraction.'

(Page 5, clause 7. 2.2) — Insert 7.2.3 as under:

'7.2.3 *n*-hexane'

(Page 5, clause 8.1.1) — Substitute the following for the existing:

'8.1.1 Take a test specimen, weigh it to the nearest milligram and place it in the thimble of the Soxhlet apparatus. Take about 100 ml of trichloroethylene or light petroleum or *n*-hexane in the extraction flask previously cleaned, dried and weighed correct to 1 mg. Extract the test specimen for 1.5 to 2 hours with a minimum of 10 siphonings per hour. Disconnect the apparatus.'

(Page 5, clause 8.1.2) — Substitute the following for the existing:

'8.1.2 Recover the excess of the solvent by heating the flask in a water-bath, maintained at 90 to 95°C if the solvent is trichloroethylene, 60 to 65°C if the solvent is light petroleum and 70 to 75°C if the solvent is *n*-hexane, and simultaneously allowing a stream of air to pass through the flask by means of a tube terminating just below its neck. Remove all traces of moisture by heating the flask at 105 ± 3°C for 30 min. Weigh the flask and determine the mass of the extract (*M_e*) correct to 1 mg.'

Amend No. 1 to IS 2969 : 1974

(*Page 5, clause 8.2.1*) — Substitute the following for the existing:

'8.2.1 Take a test specimen, weigh it to the nearest milligram and place it in the thimble of the Soxhlet apparatus. Take about 150 ml of trichloroethylene or light petroleum or *n*-hexane in the extraction flask previously cleaned, dried and weighed correct to 1 mg. Extract the test specimen for 1.5 to 2 hours with a minimum of 6 siphonings per hour. Disconnect the apparatus.'

(TX 05)